

CLAIMS

What is claimed is:

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- 1 1. An optical communication system, comprising:
2 an optical transmitter comprising:
3 an error correction encoder, wherein the error correction encoder to
4 output data that is encoded according to an error correction code selected from a
5 predetermined set of error correction codes having differing data transfer rates, and
6 a laser/driver unit coupled to the error correction encoder, wherein the
7 laser/driver unit to transmit optical signals modulated with data from the error
8 correction encoder; and
9 an optical receiver comprising:
10 an optical detector/amplifier to receive optical signals, and
11 an error correction decoder coupled to the optical detector/amplifier,
12 wherein the error correction decoder to decode data according to the error
13 correction code selected in the error correction encoder.
- 1 2. The system of claim 1, wherein the optical receiver further includes an error
2 rate indicator, wherein the error rate indicator to provide an indication of an error
3 rate of an optical signal received by the optical receiver.
- 1 3. The system of claim 2, wherein the error rate indicator is coupled to the
2 optical detector/amplifier.

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1 4. The system of claim 2, wherein the error rate indicator to provide an
2 indication of a power level of the optical signal received by the optical receiver.

1 5. The system of claim 2, wherein the optical receiver to further provide
2 information related to the error rate indication from the error rate indicator to the
3 optical transmitter.

1 6. The system of claim 5, wherein the error correction encoder to further select
2 an error correction code of the predetermined set of error correction codes in
3 dependence on the information related to the error rate indication.

1 7. The system of claim 6, wherein the optical receiver and the optical transmitter
2 each include a synchronization unit, the synchronization units of the optical
3 transmitter and the optical receiver to provide a communication link between the
4 optical transmitter and the optical receiver that is separate from optical signals
5 transmitted by the optical transmitter and optical signals received by the optical
6 receiver, the optical receiver to use the communication link provided by the
7 synchronization units to provide the information related to the error rate indication to
8 the optical transmitter.

1 8. The system of claim 6, wherein the optical receiver is part of an optical
2 transceiver.

1 9. The system of claim 8, wherein the optical transceiver to further provide the
2 information related to the error rate indication to the optical transmitter via an optical
3 signal sent to another optical transceiver that includes the optical transmitter.

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1 10. The system of claim 9, wherein the optical signal sent by the optical
2 transceiver includes tone modulation to provide the error rate indication to the
3 optical transmitter.

1 11. The system of claim 1, wherein the predetermined set of error correction
2 codes includes a selection of no error correction encoding.

1 12. The system of claim 2, wherein the error rate indicator is implemented using
2 the error correction decoder.

1 13. An optical communication system, comprising:
2 an optical transmitter, wherein the optical transmitter includes error correction
3 encoder means for encoding data according to an error correction code selected
4 from a predetermined set of error correction codes having differing data transfer
5 rates; and
6 an optical receiver operatively coupled to the optical transmitter, wherein the
7 optical receiver includes error correction decoder means for decoding data
8 according to the error correction code selected in the error correction encoder.

1 14. The system of claim 13, wherein the optical receiver further includes an error
2 rate indicator, wherein the error rate indicator to provide an indication of an error
3 rate of an optical signal received by the optical receiver.

1 15. The system of claim 14, wherein the error rate indicator is coupled to an
2 optical detector/amplifier of the optical receiver.

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1 16. The system of claim 14, wherein the error rate indicator to provide an
2 indication of a power level of the optical signal received by the optical receiver.

1 17. The system of claim 14, wherein the optical receiver to further provide
2 information related to the error rate indication from the error rate indicator to the
3 optical transmitter.

1 18. The system of claim 17, wherein the error correction encoder means selects
2 an error correction code of the predetermined set of error correction codes in
3 dependence on the information related to the error rate indication.

1 19. The system of claim 18, wherein the optical receiver and the optical
2 transmitter each include synchronization means for providing a communication link
3 between the optical transmitter and the optical receiver that is separate from optical
4 signals transmitted by the optical transmitter and optical signals received by the
5 optical receiver, the optical receiver to use the synchronization means to provide the
6 information related to the error rate indication to the optical transmitter.

1 20. The system of claim 18, wherein the optical receiver is part of an optical
2 transceiver.

1 21. The system of claim 20, wherein the optical transceiver to further provide the
2 information related to the error rate indication to the optical transmitter via an optical
3 signal sent to another optical transceiver that includes the optical transmitter.

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1 22. The system of claim 21, wherein the optical signal sent by the optical
2 transceiver uses tone modulation to provide the error rate indication to the optical
3 transmitter.

1 23. The system of claim 13, wherein the predetermined set of error correction
2 codes includes a selection of no error correction encoding.

1 24. The system of claim 14, wherein the error rate indicator is implemented using
2 the error correction decoder.

1 25. An optical transceiver for use in a communication system, the optical
2 transceiver comprising:

3 an error correction encoder, wherein the error correction encoder to output
4 data that is encoded according to an error correction code selected from a
5 predetermined set of error correction codes having differing data transfer rates, the
6 predetermined set also including a selection of no error correction encoding;

7 a laser/driver unit coupled to the error correction encoder, wherein the
8 laser/driver unit to transmit optical signals modulated with data from the error
9 correction encoder;

10 an optical detector/amplifier to receive optical signals; and

11 an error correction decoder coupled to the optical detector/amplifier, wherein
12 the error correction decoder to decode data according to an error correction code
13 selected from the predetermined set of error correction codes.

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31. The optical transceiver of claim 29, wherein the optical transceiver to further provide the information related to the error rate indication to another optical transceiver via an optical signal sent to the other optical transceiver, the other optical transceiver being the source of the received optical signal.

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1 32. The optical transceiver of claim 31, wherein the optical signal sent by the
2 optical transceiver to the other optical transceiver includes tone modulation to
3 provide the error rate indication to the optical transmitter.

1 33. The optical transceiver of claim 25, wherein the error correction encoder
2 comprises a field programmable gate array.

1 34. The optical transceiver of claim 33, wherein the field programmable gate
2 array is dynamically reprogrammable to encode data according to an error
3 correction code selected from the predetermined set of error correction codes.

1 35. A method for use in an optical communication system, the method
2 comprising:

3 measuring a parameter of an optical signal received in the optical
4 communication system, wherein the parameter is indicative of an error rate of data
5 contained in received optical signals;

6 selecting an error correction code from a predetermined set of error
7 correction codes based on the measurement; and

8 configuring the optical communication system to use the selected error
9 correction code.

1 36. The method of claim 35 wherein the predetermined set of error correction
2 codes includes a selection of no error correction coding.

1 37. The method of claim 35, wherein the parameter is a power level of received
2 optical signals.

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1 38. The method of claim 35 wherein configuring the optical communication
2 system to use the selected error correction code comprises:

3 encoding data to be transmitted in an optical signal according to the selected
4 error correction code;

5 providing to an intended receiver of the optical signal an indication of the
6 selected error correction code; and

7 transmitting the encoded data.

1 39. The method of claim 35 wherein configuring the optical communication
2 system to use the selected error correction code comprises providing information
3 associated with the selected error correction code to a transmitter of the received
4 optical signal.

1 40. An optical communication system, comprising:

2 means for measuring a parameter of an optical signal received in the optical
3 communication system, wherein the parameter is indicative of an error rate of data
4 contained in received optical signals;

5 means for selecting an error correction code from a predetermined set of
6 error correction codes based on the measurement; and

7 means for configuring the optical communication system to use the selected
8 error correction code.

1 41. The system of claim 40, wherein the predetermined set of error correction
2 codes includes a selection of no error correction coding.

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1 42. The system of claim 40, wherein the parameter is a power level of received
2 optical signals.

1 43. The system of claim 40 wherein the means for configuring comprises:
2 means for encoding data to be transmitted in an optical signal according to
3 the selected error correction code;
4 means for providing to an intended receiver of the optical signal an indication
5 of the selected error correction code; and
6 means for transmitting the encoded data.

1 44. The system of claim 40 wherein the means for configuring comprises means
2 for providing information associated with the selected error correction code to a
3 transmitter of the received optical signal.

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